

Appl. No. 10/034,295
Reply to Office Action of June 15, 2005

Docket No. FLEX-002PUS

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1. (Currently Amended) A method comprising:
capturing at least a portion of an image in a field of view to provide a digital image;
digitally compressing the digital image to provide a compressed file having a file size;
[and]
providing a focus accuracy parameter, the focus accuracy parameter derived from the file size of the compressed file; and
determining from the focus accuracy parameter, the distance required to move a lens to bring the lens into focus.
2. (Cancelled)
3. (Original) The method as recited in Claim 1 further comprising:
determining, from the focus accuracy parameter, the range to an object in the image.
4. (Original) The method as recited in Claim 1 further comprising:
capturing at least a portion of an image in a field of view to provide a second digital image;
digitally compressing the second digital image;
extracting a second focus accuracy parameter, the second focus accuracy parameter indicative of the focus accuracy of the second digital image; and
comparing the focus accuracy parameter with the second focus accuracy parameter to determine which digital image is best focused.
5. (Original) A lens focusing system comprising:
a lens in a field of view of an image detector;
a mechanism to move the lens;
a compression engine, responsive to the image detector, to provide a compressed data file; and

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a digital processor to compare the size of each compressed data file and to provide a control signal to the motor to move the lens to a position that creates the largest compressed data file.

6. (Original) A method of focusing a lens comprising:
 - (a) capturing a first image and digitally compressing and storing the data;
 - (b) moving the lens to another position;
 - (c) capturing a second image and digitally compressing and storing the data; and
 - (d) comparing the size of the data file of the first image with the size of the data file of the second image and moving the lens in the direction of the position providing the larger file size.
7. (Original) An automatic focusing system for a camera comprising:
 - a lens;
 - a driver that drives said lens along an optical axis of said lens;
 - a detector that receives an optical image through said lens and outputting signals indicative of said received optical image at an instant of time;
 - a processor that processes said signals to provide a digital signal indicative of the optical image and to compress said digital signal to provide a compressed digital signal to provide a size signal indicative of the size of the compressed digital signal; and
 - a controller that controls said driver to locate said lens at a position where said size signal becomes greatest.
8. (Original) The automatic focusing system as recited in claim 7 wherein the size signal is a digital word indicative of the size of the compressed digital image.
9. (Original) The automatic focusing system as recited in claim 7 wherein the compressed digital image is a JPEG compressed image.
10. (Original) The automatic focusing system as recited in claim 7 wherein said detector comprises a charge coupled device having a plurality of light receiving pixels and color filters

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provided in front of said light receiving pixels, each of said color filters transmitting one of said plurality of color components.

11. (Original) The automatic focusing system as recited in claim 7 wherein said controller that controls said driver to locate said lens where said size signal becomes greatest by moving said lens along the optical axis to a plurality of lens positions and comparing between values of said size signal measured at said lens positions.
12. (Original) The automatic focusing system as recited in claim 7 wherein said controller initially moves said lens in a predetermined direction by a predetermined amount.
13. (Original) The automatic focusing system as recited in claim 12 wherein said driver moves said lens in a same direction by a calculated amount.
14. (Original) The automatic focusing system as recited in claim 7 wherein a numerical function maximizing technique is used to determine the greatest size signal.
15. (Original) A method of locating a lens in a unit under test comprising:
 - placing a test target a fixed distance from the unit under test;
 - moving the lens to one of a plurality of positions and capturing through the lens and digitally compressing a digital image of the test target to provide a compressed image file having a file size;
 - moving the lens to another one of a plurality of positions and capturing through the lens and digitally compressing a digital image of the test target to provide a compressed image file having a file size until the file size is maximized; and
 - fixing the lens within the unit under test at the position that provides the maximum file size.
16. (Original) A method of locating a sensor relative to a lens in a unit under test comprising:
 - replicating a test target over regions of an object plane as it passes through the lens;

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capturing an image of the test target with the sensor and segmenting the image into regions corresponding to the regions of the object plane and compressing a digital image corresponding to each region and recording the relative size of the compressed image for each region; and

adjusting the location of the sensor relative to the lens to set axial and tilt adjustments such that the relative size of the compressed image for each region is maximized.

17. (Original) A method comprising:

(a) capturing a portion of a first image passing through a lens and digitally compressing and recording the size of the resulting data file;

(b) moving the lens to another position;

(c) capturing a portion of a second image passing through the lens and digitally compressing and recording the size of the resulting data file; and

(d) comparing the size of the data file of the first image with the size of the data file of the second image to determine which lens position provides a larger file size.

18. (Original) The method as recited in claim 17 wherein the digitally compressing step utilizes JPEG compression.

19. (Original) A range finder comprising:

a lens having a plurality of predetermined positions with corresponding ranges;

a driver that drives said lens along an optical axis of said lens;

a detector that receives an optical image through said lens and outputting signals indicative of said received optical image at an instant of time;

a processor that processes said signals to provide a digital signal indicative of the optical image and to compress said digital signal to provide a compressed digital signal to provide a size signal indicative of the size of the compressed digital signal; and

a controller that controls said driver to locate said lens at a position where said size signal becomes greatest, said position corresponding to a specific range.